

NATURAL HISTORY MISCELLANEA

Published by

The Chicago Academy of Sciences

Lincoln Park - 2001 N. Clark St., Chicago 14, Illinois

No. 44

April 15, 1949

The Salamander *Desmognathus quadramaculatus amphileucus*

Reduced to Synonymy

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During the summer of 1946 I was fortunate in securing through the efforts of my sons, Alexander and Hallowell, twelve topotypes of *Desmognathus quadramaculatus amphileucus* Bishop. This series was collected two miles north of Demorest, Habersham County, Georgia. The country around Demorest is rolling, relatively low farmland about 1450 feet above sea level and in the Piedmont Province but near its union with the Blue Ridge Province. No really good collecting sites for a mountain stream salamander exist in the region of Demorest, as I found out when trying to secure additional topotypical *amphileucus* some weeks after my sons' visit. Neill (1948) reports a similar failure, although Wood (1947) collected four topotypes.

Examination of my twelve topotypes reveals an almost total lack of *amphileucus* characters: four large females (81-74 mm. snout-to-vent measurement; total lengths of second and fourth in size are 143 and 137 mm.) have typical dark *quadramaculatus* coloration. One small female (52 mm. snout-to-vent) has a little tan on the snout and a slightly lightened tail tip. Seven juveniles (41-34 mm.) have snouts and tails with even less suggestion of *amphileucus* coloration.

Since a more typical lot of *quadramaculatus* could scarcely be found, the validity of *amphileucus* is at once thrown open to serious doubt. Bishop (1943, p. 214) knows nothing of the circumstances under which his original three specimens were collected, whereas I know that my twelve topotypes were not the result of selective collecting as I am convinced Bishop's types were.

Fortunately, I have at my disposal in the collection of the Chicago Natural History Museum abundant series of *quadramaculatus* from widely separated localities. No selective collecting was involved in the four representative series that I shall describe below.

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Series 1. Rabun County, Georgia, 23 Specimens. Rabun County lies just north of Habersham County, whence *amphileucus* was described (Bishop, 1941, p. 12), and occupies Georgia's northeastern tip, which is in the Blue Ridge Province. The series comes partly from Mountain City (2500-3200 feet altitude) and partly from Rabun Bald (2000-3600 feet).

The two largest individuals measure 89 and 86 mm. from snout to vent, the smallest 35 mm. All but four or five have snouts mottled with tan, and in three or four individuals the mottling is very distinct. The four largest specimens have dark, unmottled snouts, so a correlation between size and mottling is evident. The tail tip is noticeably lightened in one and a little lightened in three or four others, none of which is large. This light-tailed individual might rate as an *amphileucus*, certainly as an intergrade.

Series 2. Macon and Jackson Counties, North Carolina, 27 Specimens. Macon County lies adjacent to Rabun County on the north, and Jackson County is north and east of Macon. Both are in the Blue Ridge Province. Thirteen of the 27 were collected at 3800 feet altitude (Highlands), the others were taken four miles northeast of Highlands in Whiteside Cove of Jackson County at 2800 feet.

The biggest of the 13 from Highlands measures 80 mm. from snout to vent. Four have snouts mottled with tan, and light tan tail tips; five tan-mottled heads but tail tips not so noticeably lightened. The nine foregoing specimens are small to intermediate in size. The three largest individuals lack the tan snouts and light tails as does one of intermediate size. Again there is a correlation between size and color. The 14 Jackson County specimens are strikingly similar to those from Highlands except for the lack of large, dark individuals, the two largest measuring only 69 mm. from snout to vent.

Series 3. Carter County, Tennessee, and Avery County, North Carolina, 17 Specimens. These counties are adjacent in spite of being in different states. Nine of the 17 were taken eight miles southwest of Elizabethton, Tennessee, at an altitude of 1500 feet where the Valley and Ridge Province joins the Blue Ridge Province. The remaining eight came from Grandfather Mountain, Avery County, at 4000 feet (Blue Ridge Province).

The largest and smallest of the Carter County specimens measure 70 and 48 mm. from snout to vent. They have unusually light backs and bellies, the former marked with fine metallic speckling, characteristics that set them off from individuals of the other three series. All have tan snouts and light tail tips. The Avery County specimens also possess relatively light backs and bellies with metallic speckling on the former but lack the tan snouts even though in some the snouts are faintly mottled. The tail tips are somewhat

lightened in two or three individuals. The largest specimen measures 78 mm. from snout to vent, the smallest 41. There seems to be a negative correlation between tan snouts and high altitude in this series.

Series 4. Giles County, Virginia, 39 Specimens. These salamanders were taken near Mountain Lake Biological Station (3650-3800 feet altitude) in the Valley and Ridge Province at the northeastern extremity of the species' range. The three largest specimens measure only 70 mm. from snout to vent. The snout exhibits a little tan color in six or seven Virginia individuals and is faintly tan in a few others; three or four have light tails. The correlation between size and head color shown in other series is not evident here: three of the five largest individuals have the tan snouts. The backs and bellies are not light as in the preceding series.

Before drawing a conclusion I shall describe briefly three specimens in the Chicago Natural History Museum that apparently represent the kind of material on which *amphileucus* is based. One is from Gainesville, Hall County, Georgia. This county lies adjacent to Habersham on the southwest and the altitude at Gainesville, a Piedmont town, is 1250 feet. The specimen measures 52 mm. from snout to vent. The other two are from Habersham County and measure 69 and 65 mm. In all three the bodies are black above and below, the snouts are light tan, and the tails are lightened distally. The history of these specimens is but incompletely known so they might well have been the product of selective collecting. Tan-headed, light-tailed individuals among black ones inevitably would attract the attention of the casual collector.

DISCUSSION

Desmognathus quadramaculatus amphileucus was originally based on color and size. The color character is extremely difficult to deal with because it is one of degree, changes with age at least in some populations, and is affected by method of preservation. The topotypes and the four series described above show that *amphileucus* coloration occurs no more frequently at the type locality than it does over a large part of the species' range. The *amphileucus* color character might be considered a normal variation of the *quadramaculatus* pattern; in extreme development this coloration occurs more or less rarely over a large part of the species' range.

The topotypical series completely fails to confirm the alleged small size of *amphileucus* as even a casual glance at the foregoing measurements will show.

In view of these facts *amphileucus* should be relegated to the synonymy of *quadramaculatus*.

In his discussion of this problem, Neill (1948) confirms Bishop's characters and adds two: fewer intercostal spaces between the adpressed limbs and a larger eye. Neill's data are hard to evaluate because of a certain vagueness in his writing. He refers to a "few" specimens taken near the Habersham-Rabun county line as scarcely distinct from *quadramaculatus* in coloration during life but developing after preservation whitish snouts and tail tips. Again, at Tiger in Rabun County, he secured a "series," all of which had tan snouts and horn-colored tail tips. After preservation they were very light and mostly resembled *amphileucus*. They agreed with another "series" previously collected by him at Tiger.

A more detailed description of Neill's material is needed since, from the foregoing, I doubt that his specimens differ materially from those that I describe above from the same region.

A brief consideration of his two new characters is called for. In my 12 *amphileucus* topotypes there are three intercostal spaces between the adpressed toes of the five largest individuals, two in the rest except one, which has three. Neill gives one or two for *amphileucus*, Bishop (1943, p. 212) two or three for typical *quadramaculatus*. The eye diameter in the four large individuals of this same series is contained 1.4 times in the snout length. Bishop gives the relation as about 1.5 in typical *quadramaculatus*, whereas Neill's average for adult *amphileucus* is 1.2. My data, although taken from topotypes, do not support Neill's new *amphileucus* characters, neither of which is, generally speaking, good for distinguishing subspecies of plethodontid salamanders.

LITERATURE CITED

Bishop, Sherman C.

- 1941 Notes on salamanders with descriptions of several new forms. Occas. Papers Univ. Michigan Mus. Zool., no. 451, p. 1-21, pl. 1-2.
- 1943 Handbook of salamanders. Ithaca (New York): Comstock Publ. Co. xiv+555 p., 144 fig., 56 maps.

Neill, Wilfred T.

- 1948 The status of the salamander *Desmognathus quadramaculatus amphileucus*. Copeia, no. 3, p. 218.

Wood, John Thornton

- 1947 Habitat of *Desmognathus quadramaculatus amphileucus*. Copeia, no. 4, p. 273.